

Georgia Gulf shares 10 years' experience with predictive maintenance

When you spend 10 years working with predictive maintenance, you become an expert on what it takes to successfully implement a program.

Ted Helmer and Georgia Gulf Corporation started their program 10 years ago, first concentrating on critical machinery and gradually adding general purpose machinery to the program. Today, more than 5,000 machines have been incorporated into the program at the eight-plant complex in Plaquemine, Louisiana.

We asked Helmer, Central Maintenance Superintendent, to share his experience on implementing a predictive maintenance program. In addition to recommending that you build a predictive maintenance program in small increments, here's what he advised:

Tips for implementing a predictive maintenance program:

"When you start the program, don't try to solve all the mechanical problems on

rotating machinery at once. Approach your program at first with the idea in mind that you're going to take readings, document, and review.

"Don't expect that you're going to take readings and at the first excursion beyond the vibration limit, recommend that the machine be shut down.

"At first, take measurements and compare them with measurements taken on similar machines. Over a period of time—usually six months to one year—these comparisons can be used as criteria for determining whether there is mechanical damage on rotating machines.

"Until that time, always use two indicators to recommend shutting down a machine. These indicators can be vibration and bearing temperature, or vibration and oil analysis, for example."*

**In cases of vibration that is well beyond the alarm limit or tolerance, Bently Nevada recommends shutting down the machine immediately.*

Advantages of an automated rotating machinery information system:

"When you're dealing with 5,000 machines, it's cumbersome to collect data in a manual form and deal with the paperwork. With Bently Nevada's Snapshot periodic monitoring system, all the data goes onto a disk. All the disks for the 5,000 machines are kept in one file drawer, and we still have the opportunity to look at the history file on every machine any time we need to."

How the program is conducted:

"Our critical machines are permanently monitored with Bently Nevada 7200 Series on-line monitoring systems. On these machines, the production personnel watch the monitors, and on a weekly basis, we take vibration signatures from the monitor output, using the Snapshot.

"We take overall vibration readings on general purpose machines either weekly or

monthly, depending on how critical they are to our operation. Whenever the overall readings exceed tolerances, we use the Snapshot to obtain diagnostic information."

Staff skills:

"We shift the responsibility for troubleshooting from engineers to the lowest skill levels we can. Our technicians are required to be journeymen mechanics or millwrights; they must be good mechanics. We train them to operate the instrumentation.

"We have five technicians who operate from a central lab in our mechanical group. They spend one month taking data from each production unit so they're familiar with all the equipment in the complex."

What happens when a technician detects a potential problem on a machine:

"When the technician sees an increase in vibration on a machine, the first thing he does is look at the history file to see how the machine has operated in the past.

"If he sees from studying the performance history that it is a real increase in vibration—not a fluctuation in normal operation—then he takes spectral data, bearing temperatures, and oil samples and examines the hold down bolts on the machine.

"Then he evaluates the information and schedules the machinery to be inspected. On the schedule, the technician indicates how long he feels the machine can continue to operate without incurring more significant damage.

"After the equipment is repaired and returned to service, the technician is present at startup to ensure that the machine is correctly aligned and there are no other problems. He takes spectral data at this time to add to the history file."

The importance of communications:

"Building communications channels is essential, especially with people in the production areas. If your technicians can't build communications bridges with the production people, your program won't succeed—no matter how good your technical approach is."

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Ted Helmer
Georgia Gulf Corporation

The value of reports and documentation:

"It's crucial that you document the cost effectiveness of the program. If you can't show cost savings, management won't want to fund the program.

"We compared the repair bills, number of spare parts, and the amount of overtime to demonstrate the effectiveness of predictive maintenance versus breakdown maintenance."

The cost savings Georgia Gulf has achieved:

"We've reduced maintenance costs by 50 percent over the years. One example of the progress we've made is the labor costs in our motor shop.

"At one time we had seven electricians working in the motor shop with a mandatory 10 percent overtime requirement. Today we have two electricians and there is no overtime." ■